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the adhesive face, and a width of the crease roller is almost identical to a dimension between both collars.

When doing this, the crease is formed on places from which the top tape is to be lifted, and then the top tape can be lifted easily when such top tape comes up to the lifting roller.

(6) A parts supplying method of releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein a predetermined length of the released top tape is lifted by almost 90 degree to direct respective adhesive faces on both ends of the top tape inwardly, the top tape is folded by tilting a lifted top tape toward a not-lifted top tape, and the folded top tape is fed every predetermined pitch.

When doing this, the top tape can be lifted by almost 90 degree to direct respective adhesive faces on both ends inwardly by merely passing the top tape through the top tape carrying portion and also the lifted portion of the top tape is tilted inwardly to come into tight contact with the not-lifted portion.

(7) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft, and

a guide flange formed on one end face of the winding drum and having an opening portion through which a side surface of the top tape wound on the winding drum is pushed.

When doing this, the method of removing collectively the top tape from the winding drum in the axial direction by detaching the reel member from the driving shaft and then applying the force to the side surface of the top tape through the opening portion of the guide flange can be employed as the method of removing the top tape wound on the reel member. Therefore, the pushing force of the finger can be applied directly to the side surface of the top tape that is wound tightly and densely on the winding drum, and removal of the top tape

employed.

(9) In the parts supplying system set forth in (8), the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and

an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.

In the reel member of this parts supplying system, respective winding surfaces of a pair of winding drums are formed as tapered surfaces in the same direction, and in addition the outer diameter of the other winding drum opposing to the other end face of one winding drum is formed smaller than an outer diameter of the other end face of one winding drum. Thus, a level difference is formed at the boundary portion between the winding drums. Therefore, if a pair of winding drums on which the top tape is wound can be separated by forming the level difference at the boundary portion between the winding drums, not only both winding drums can be separated in the situation that the top tape is put on one winding drum and held thereon but also a contact friction between the other winding drum and the top tape can be reduced by the level difference and the tapered surfaces and a separating force can be reduced.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(10) A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum.

In the reel member of this parts supplying system, the top tape wound on the winding surface of the winding drum does not contact to the winding surface in the recess portion and can be deformed in the depth direction of the recess

portion. In other words, the wound top tape is ready to be removed from the winding surface if the top tape is deformed (crashed) in the direction along which such top tape is pushed into the recess portion. In this manner, if a part of the wound top tape in the circumferential direction is removed in the recess portion, a winding/clamping force generated by winding the tape on the whole circumference of the winding surface disappears, and thus the wound top tape is ready to be removed collectively from the winding drum.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(11) A reel member of a parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member, and

a guide flange formed on one end face of the winding drum,

whereby the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side.

In the reel member of this parts supplying system, since the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on the inner side and the guide flange on the outer side, the winding/tightening force of the wound top tape disappears and thus the wound top tape can be removed from the winding surface. Therefore, the wound top tape can be removed simply from the winding surface.

Therefore, like the case in above (8), the method of removing the top tape, which is wound tightly and densely on the winding drum, from the winding drum collectively, easily, and quickly without fail in the axial direction can be employed.

(12) In the parts supplying system set forth in any one of (7), (10) or (11), the winding drum has a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange.

CLAIMS

1. A parts supplying system comprising a top tape carrying portion for releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein the top tape carrying portion includes a tape lifting portion for lifting a predetermined length of the top tape by almost 90 degree to direct respective adhesive faces on both ends inwardly, a tape folding portion for folding the top tape by tilting a lifted top tape toward a not-lifted top tape, and a tape discharging portion for feeding the folded top tape every predetermined pitch.

2. The parts supplying system according to claim 1, wherein the tape lifting portion consists of at least one lifting roller, the lifting roller is a roller having a collar on both ends, a dimension between both collars is almost equal to a width dimension of a not-lifted top tape, the released top tape is passed on the lifting roller to direct an adhesive face upwardly, and the lifting roller lifts up the top tape that is passed on the collars along the collars by almost 90 degree, and

the tape folding portion consists of a folding roller, the folding roller is positioned in an opposite direction to a direction along which the top tape is lifted to apply a tension to the not-lifted top tape and then folds the top tape by tilting the lifted top tape toward the not-lifted top tape.

3. The parts supplying system according to claim 2, wherein a part of the collars of the lifting roller is notched, the top tape is kept in a flat state in a collar-notched portion, and the top tape that is passed on the collars is lifted along the collars by almost 90 degree in a collar-not-notched portion.

4. The parts supplying system according to claim 2, wherein the folding roller and the lifting roller have an almost identical shape respectively.

5. The parts supplying system according to claim 2, wherein a crease roller that engages with the released top tape before the top tape comes up to the lifting roller is provided, the crease roller contacts to a surface of the top tape

having the adhesive face, and a width of the crease roller is almost identical to a dimension between both collars.

6. A parts supplying method of releasing a top tape pasted onto a carrier tape from the carrier tape to carry when a parts housed in the carrier tape is supplied by feeding intermittently a taped-component, in which the top tape having an adhesive face on both end portions in a width direction is pasted releasably on the carrier tape in which the parts is stored, to a parts supplying position,

wherein a predetermined length of the released top tape is lifted by almost 90 degree to direct respective adhesive faces on both ends of the top tape inwardly, the top tape is folded by tilting a lifted top tape toward a not-lifted top tape, and the folded top tape is fed every predetermined pitch.

7. A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft, and

a guide flange formed on one end face of the winding drum and having an opening portion through which a side surface of the top tape wound on the winding drum is pushed.

8. A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a pair of winding drums detachably attached to a driving shaft that rotates/drives the reel member, having a winding surface on respective outer peripheral surfaces, and divided in two in an axial direction, one part being detachably attached to the driving shaft, and

a guide flange formed on one end face of one winding drum,

whereby the top tape is wound on winding surfaces of the pair of winding drums.

9. The parts supplying system according to claim 8, wherein the pair of winding drums have a tapered winding surface whose outer diameter is increased large in a direction that goes away from the guide flange, and an outer diameter of an end face of the other winding drum opposing to the other end face of one winding drum is smaller than an outer diameter of the other end face of one winding drum.

10. A parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member and having a recess portion that is hollowed inwardly in a radial direction in a part of a circumference, and

a guide flange formed on one end face of the winding drum.

11. A reel member of a parts supplying system capable of taking out an electronic parts from a housing portion by releasing a top tape from a carrier tape, while moving the carrier tape which has the housing portion for the electronic parts and a surface of which is covered with the releasable top tape in a longitudinal direction, to wind on a reel member,

wherein the reel member includes

a winding drum detachably attached to a driving shaft that rotates/drives the reel member, and

a guide flange formed on one end face of the winding drum,

whereby the winding drum and the guide flange are bent in removing from the driving shaft to position the winding drum on an inner side and the guide flange on an outer side.

12. The parts supplying system according to any one of claim 7, 10 or 11, wherein the winding drum has a tapered winding surface whose outer diameter

is increased large in a direction that goes away from the guide flange.

13. The parts supplying system according to claim 10, wherein inner wall surfaces opposing to on both ends of the recess portion in a circumferential direction are formed as a tapered surface that expands outwardly in a radial direction.

14. The parts supplying system according to claim 10, wherein an opening portion through which a side surface of the top tape wound on the winding drum is pushed is formed in the guide flange, and

the opening portion and the recess portion are arranged on a straight line in the radial direction of the guide flange.

15. The parts supplying system according to any one of claim 7, 8, 10 or 11, wherein an inner side surface of the guide flange is formed as an inclined surface that reduces a thickness of the guide flange outwardly in the radial direction of the guide flange.

ABSTRACT

A subject of the present invention is to provide a parts supplying system and a method for the same, capable of preventing exposure of an adhesive face of the top tape even if a fold is displaced, and capable of removing simply and collectively the recovered top tape wound on a reel member.

In the present invention, a top tape carrying portion 1 includes a lifting roller 6 for lifting a predetermined length of the top tape by almost 90 degree to direct respective adhesive faces on both ends inwardly, a folding roller 5 for folding the top tape by tilting a lifted top tape toward a not-lifted top tape, and a tape discharging portion 18 for feeding the folded top tape every predetermined pitch. Also, a reel member for recovering the released top tape makes it possible to push out collectively the wound top tape group along the axial direction.